

PCT
NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents
United States Patent and Trademark
Office
Box PCT
Washington, D.C.20231
ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

Date of mailing (day/month/year) 18 August 2000 (18.08.00)	
International application No. PCT/US99/31312	Applicant's or agent's file reference OCIRS-072
International filing date (day/month/year) 30 December 1999 (30.12.99)	Priority date (day/month/year) 31 December 1998 (31.12.98)
Applicant TUMER, Nilgun, E. et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:

12 July 2000 (12.07.00)

☐ in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO 34, chemin des Colombettes 1211 Geneva 20, Switzerland Facsimile No.: (41-22) 740.14.35	Authorized officer Manu Berrod Telephone No.: (41-22) 338.83.38
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REC 18 APR 2001

WIPO

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INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

14

Applicant's or agent's file reference OCIRS-072	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/31312	International filing date (day/month/year) 30 DECEMBER 1999	Priority date (day/month/year) 31 [30] DECEMBER 1998
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant RUTGERS, THE STATE UNIVERSITY		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of <u>5</u> sheets. <input type="checkbox"/> This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT). These annexes consist of a total of <u>0</u> sheets.
3. This report contains indications relating to the following items: I <input checked="" type="checkbox"/> Basis of the report II <input type="checkbox"/> Priority III <input checked="" type="checkbox"/> Non-establishment of report with regard to novelty, inventive step or industrial applicability IV <input type="checkbox"/> Lack of unity of invention V <input checked="" type="checkbox"/> Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement VI <input type="checkbox"/> Certain documents cited VII <input type="checkbox"/> Certain defects in the international application VIII <input type="checkbox"/> Certain observations on the international application

Date of submission of the demand 12 JULY 2000	Date of completion of this report 30 MARCH 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer DAVID T. FOX TERRY J. DEY PARALEGAL SPECIALIST TECHNOLOGY CENTER 1800
Facsimile No. (703) 305-3230	Telephone No. (703) 308-0196

I. Basis of the report**1. With regard to the elements of the international application: ***☒ the international application as originally filed☒ the description:

pages 1-59 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

☒ the claims:

pages 60-62 , as originally filed
pages NONE , as amended (together with any statement) under Article 19
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

☒ the drawings:

pages NONE , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

☒ the sequence listing part of the description:

pages NONE , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
☐ the language of publication of the international application (under Rule 48.3(b)).
☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
☐ filed together with the international application in computer readable form.
☐ furnished subsequently to this Authority in written form.
☐ furnished subsequently to this Authority in computer readable form.
☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
☒ the claims, Nos. NONE
☒ the drawings, sheets/~~fig~~ NONE

5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

**Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report.

III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been and will not be examined in respect of:

☐ the entire international application.

☒ claims Nos. 12-13, 21, 23-35

because:

☐ the said international application, or the said claim Nos. _ relate to the following subject matter which does not require international preliminary examination (*specify*).

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _ are so unclear that no meaningful opinion could be formed (*specify*).

☐ the claims, or said claims Nos. _ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 12-13, 21 and 23-35.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. statement

Novelty (N)	Claims	<u>1-11, 14-20 and 22</u>	YES
	Claims	<u>NONE</u>	NO
Inventive Step (IS)	Claims	<u>NONE</u>	YES
	Claims	<u>1-11, 14-20 and 22</u>	NO
Industrial Applicability (IA)	Claims	<u>1-11, 14-20 and 22</u>	YES
	Claims	<u>NONE</u>	NO

2. citations and explanations (Rule 70.7)

Claims 1-11, 20 and 22 meet the criteria set out in PCT Article 33(2) and (4), because the prior art does not teach plants transformed with a gene encoding an L3 protein, wherein said plants have the industrial applicability of disease resistance.

Claims 1-2, 4, 6-11, 14-20 and 22 lack an inventive step under PCT Article 33(3) as being obvious over TUMER in view of SCHULTZ et al.

TUMER teach monocot and dicot plant transformation with a gene encoding a ribosomal protein, wherein the gene was mutated to reduce phytotoxicity (see, e.g., column 1, lines 41-67; column 2, lines 1-9; column 5, lines 43-67; column 6, lines 1-65; column 10, lines 49-59; column 14, lines 18-38; columns 15-16; column 18, lines 60-67; column 19, lines 1-58). TUMER does not teach the L3 gene.

SCHULTZ et al teach the yeast L3 gene encoding a ribosomal protein, and its mutant tcm1 which confers resistance to the chemical triconermin produced by a pathogenic fungus (see, e.g., page 8, column 1, column 2, top paragraph; page 9, column 2; page 11).

It would have been obvious to one of ordinary skill in the art to utilize the method of obtaining disease-resistant transgenic plants via transforming with a ribosomal protein gene as taught by TUMER, and to modify that method by incorporating the yeast L3 ribosomal protein taught by SCHULTZ et al, given the involvement of L3 in disease resistance as taught by SCHULTZ et al. Furthermore, it would have been obvious to mutate the yeast L3 gene in order to improve efficacy as taught by SCHULTZ et al or to reduce phytotoxicity as taught by TUMER.

Claims 3 and 5 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in the immediately preceding paragraph and further in view of KIM et al.

TUMER in view of SCHULTZ et al teach plant transformation with a (Continued on Supplemental Sheet.)

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

CLASSIFICATION:

The International Patent Classification (IPC) and/or the National classification are as listed below:

IPC(7): C12N 15/01, 5/04, 15/82; A01H 1/06, 4/00, 5/00, 5/10 and US Cl.: 435/69.1, 69.9, 410, 418, 419, 421, 440, 463, 468; 800/278, 279, 280, 288, 295, 301, 320

V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):

yeast L3 gene for enhanced disease resistance as discussed above, but do not teach plant transformation with a plant gene.

KIM et al teach an Arabidopsis L3 gene, and its close sequence similarity with the yeast L3 gene conferring resistance to a toxic chemical produced by a pathogen (see, e.g., page 177; page 179, column 1, Figure 2; page 180, column 1).

It would have been obvious to one of ordinary skill in the art to utilize the method of plant transformation with a yeast L3 gene encoding a ribosomal protein as taught by TUMER in view of SCHULTZ et al, and to modify that method by incorporating the plant L3 gene taught by KIM et al, given the sequence similarity between the two genes and the recognition by those of ordinary skill in the art that choice of L3 gene source would have been the optimization of process parameters.

----- NEW CITATIONS -----

US 5,756,322 A (TUMER) 26 MAY 1998 (26.05.98), see column 1, lines 41-67; column 2, lines 1-9).

SCHULTZ et al. Nucleotide Sequence of the tcm1 Gene (Ribosomal Protein L3) of *Saccharomyces cerevisiae*. *Journal of Bacteriology*. July 1983, Volume 155, No. 1, pages 8-14, especially pages 8, 9 and 11.

PATENT COOPERATION TREATY

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

To: SHAWN P. FOLEY
LERNER, DAVID, LITTENBERG, KRUMHOLZ &
MENTLIK, LLP
600 SOUTH AVENUE WEST
WESTFIELD, NJ 07090

PCT

NOTIFICATION OF TRANSMITTAL OF INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Rule 71.1)

Date of Mailing
(day/month/year)

11 APR 2001

Applicant's or agent's file reference
OCIRS-072

IMPORTANT NOTIFICATION

International application No.
PCT/US99/31312

International filing date (day/month/year)
30 DECEMBER 1999

Priority Date (day/month/year)
30 DECEMBER 1998

Applicant
RUTGERS, THE STATE UNIVERSITY

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.
4. **REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices)(Article 39(1))(see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

RECEIVED

APR 16 2001

LDLK&M

Name and mailing address of the IPEA/US
Commissioner of Patents and Trademarks
Box PCT
Washington, D.C. 20231

Facsimile No. (703) 305-3230

Authorized officer
DAVID T. FOX

Telephone No. (703) 308-0196

TERRY J. DEY
PARALEGAL SPECIALIST
TECHNOLOGY CENTER 1600

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference OCIRS-072	FOR FURTHER ACTION See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)	
International application No. PCT/US99/31312	International filing date (day/month/year) 30 DECEMBER 1999	Priority date (day/month/year) 30 DECEMBER 1998
International Patent Classification (IPC) or national classification and IPC Please See Supplemental Sheet.		
Applicant RUTGERS, THE STATE UNIVERSITY		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.
2. This REPORT consists of a total of 5 sheets.
- ☐ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority. (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).
- These annexes consist of a total of 0 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☒ Non-establishment of report with regard to novelty, inventive step or industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 12 JULY 2000	Date of completion of this report 30 MARCH 2001
Name and mailing address of the IPEA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer DAVID T. FOX
Facsimile No. (703) 305-3230	Telephone No. (703) 308-0196

TERRY J. DEY
PARALEGAL SPECIALIST
TECHNOLOGY CENTER 1800

I. Basis of the report1. With regard to the **elements** of the international application:*

- ☒ the international application as originally filed
- ☒ the description:
pages 1-59 , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____
- ☒ the claims:
pages 60-62 , as originally filed
pages NONE , as amended (together with any statement) under Article 19
pages NONE , filed with the demand
pages NONE , filed with the letter of _____
- ☒ the drawings:
pages NONE , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____
- ☒ the sequence listing part of the description:
pages NONE , as originally filed
pages NONE , filed with the demand
pages NONE , filed with the letter of _____

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language _____ which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in printed form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. ☒ The amendments have resulted in the cancellation of:

- ☒ the description, pages NONE
- ☒ the claims, Nos. NONE
- ☒ the drawings, sheets/fig. NONE

5. ☐ This report has been drawn as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

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III. Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non obvious), or to be industrially applicable have not been and will not be examined in respect of:

☐ the entire international application.

☒ claims Nos. 12-13, 21, 23-35

because:

☐ the said international application, or the said claim Nos. _ relate to the following subject matter which does not require international preliminary examination (*specify*).

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. _ are so unclear that no meaningful opinion could be formed (*specify*).

☐ the claims, or said claims Nos. _ are so inadequately supported by the description that no meaningful opinion could be formed.

☒ no international search report has been established for said claims Nos. 12-13, 21 and 23-35.

2. A meaningful international preliminary examination cannot be carried out due to the failure of the nucleotide and/or amino acid sequence listing to comply with the standard provided for in Annex C of the Administrative Instructions:

☐ the written form has not been furnished or does not comply with the standard.

☐ the computer readable form has not been furnished or does not comply with the standard.

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. statement**

Novelty (N)	Claims <u>1-11, 14-20 and 22</u>	YES
	Claims <u>NONE</u>	NO
Inventive Step (IS)	Claims <u>NONE</u>	YES
	Claims <u>1-11, 14-20 and 22</u>	NO
Industrial Applicability (IA)	Claims <u>1-11, 14-20 and 22</u>	YES
	Claims <u>NONE</u>	NO

2. citations and explanations (Rule 70.7)

Claims 1-11, 20 and 22 meet the criteria set out in PCT Article 33(2) and (4), because the prior art does not teach plants transformed with a gene encoding an L3 protein, wherein said plants have the industrial applicability of disease resistance.

Claims 1-2, 4, 6-11, 14-20 and 22 lack an inventive step under PCT Article 33(3) as being obvious over TUMER in view of SCHULTZ et al.

TUMER teach monocot and dicot plant transformation with a gene encoding a ribosomal protein, wherein the gene was mutated to reduce phytotoxicity (see, e.g., column 1, lines 41-67; column 2, lines 1-9; column 5, lines 43-67; column 6, lines 1-65; column 10, lines 49-59; column 14, lines 18-38; columns 15-16; column 18, lines 60-67; column 19, lines 1-58). TUMER does not teach the L3 gene.

SCHULTZ et al teach the yeast L3 gene encoding a ribosomal protein, and its mutant tcml which confers resistance to the chemical tricondermin produced by a pathogenic fungus (see, e.g., page 8, column 1, column 2, top paragraph; page 9, column 2; page 11).

It would have been obvious to one of ordinary skill in the art to utilize the method of obtaining disease-resistant transgenic plants via transforming with a ribosomal protein gene as taught by TUMER, and to modify that method by incorporating the yeast L3 ribosomal protein taught by SCHULTZ et al, given the involvement of L3 in disease resistance as taught by SCHULTZ et al. Furthermore, it would have been obvious to mutate the yeast L3 gene in order to improve efficacy as taught by SCHULTZ et al or to reduce phytotoxicity as taught by TUMER.

Claims 3 and 5 lack an inventive step under PCT Article 33(3) as being obvious over the prior art as applied in the immediately preceding paragraph and further in view of KIM et al.

TUMER in view of SCHULTZ et al teach plant transformation with a (Continued on Supplemental Sheet.)

Supplemental Box

(To be used when the space in any of the preceding boxes is not sufficient)

Continuation of: Boxes I - VIII

Sheet 10

CLASSIFICATION:

The International Patent Classification (IPC) and/or the National classification are as listed below:

IPC(7): C12N 15/01, 5/04, 15/82; A01H 1/06, 4/00, 5/00, 5/10 and US Cl.: 435/69.1, 69.9, 410, 418, 419, 421, 440, 463, 468; 800/278, 279, 280, 288, 295, 301, 320

V. 2. REASONED STATEMENTS - CITATIONS AND EXPLANATIONS (Continued):

yeast L3 gene for enhanced disease resistance as discussed above, but do not teach plant transformation with a plant gene.

KIM et al teach an Arabidopsis L3 gene, and its close sequence similarity with the yeast L3 gene conferring resistance to a toxic chemical produced by a pathogen (see, e.g., page 177; page 179, column 1, Figure 2; page 180, column 1).

It would have been obvious to one of ordinary skill in the art to utilize the method of plant transformation with a yeast L3 gene encoding a ribosomal protein as taught by TUMER in view of SCHULTZ et al, and to modify that method by incorporating the plant L3 gene taught by KIM et al, given the sequence similarity between the two genes and the recognition by those of ordinary skill in the art that choice of L3 gene source would have been the optimization of process parameters.

----- NEW CITATIONS -----

US 5,756,322 A (TUMER) 26 MAY 1998 (26.05.98), see column 1, lines 41-67; column 2, lines 1-9).

SCHULTZ et al. Nucleotide Sequence of the *tcml* Gene (Ribosomal Protein L3) of *Saccharomyces cerevisiae*. Journal of Bacteriology. July 1983, Volume 155, No. 1, pages 8-14, especially pages 8, 9 and 11.